

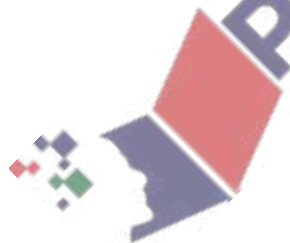
1. Nov/2021/Paper\_11/No.24

(a)  $A = \begin{pmatrix} -6 & 2 \\ 1 & 4 \end{pmatrix}$

Find  $A^2$ .

(b)  $B = \begin{pmatrix} x & -5 \\ 2 & -3 \end{pmatrix}$

Find the value of  $x$  when  $|B| = -2$ .

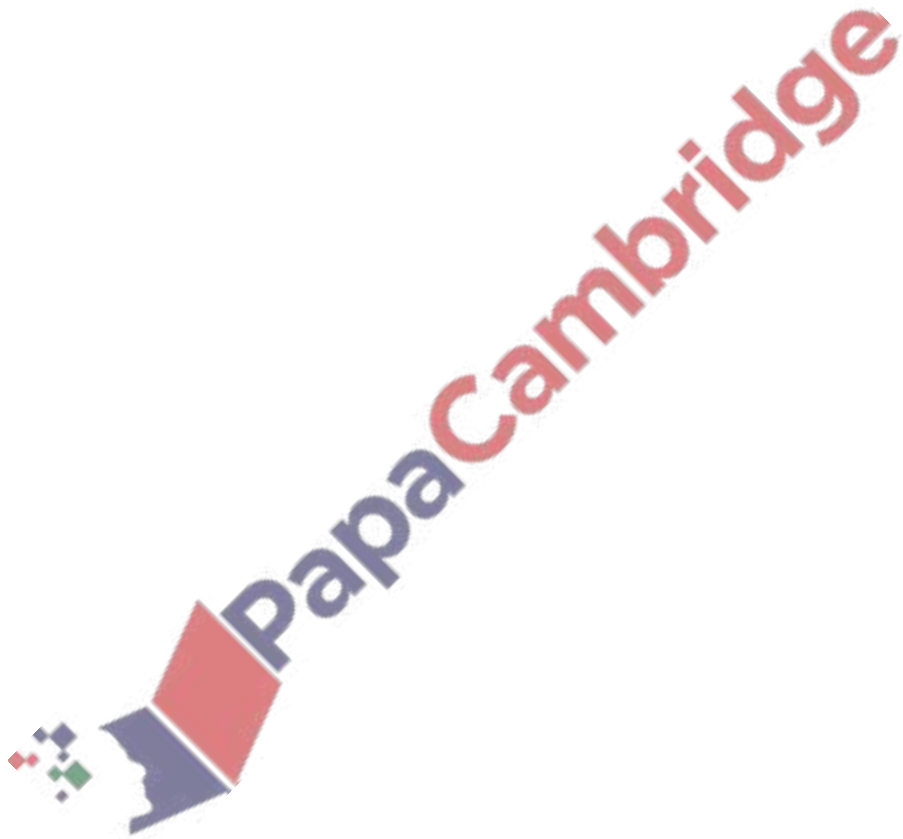
 PapaCambridge  $\begin{pmatrix} & \\ & \end{pmatrix}$  [2]

$x = \dots\dots\dots$  [2]

Find.

$$\begin{pmatrix} 3 & -2 \\ 1 & 2 \end{pmatrix}^{-1}$$

$$\left( \begin{array}{c} \phantom{0} \\ \phantom{0} \end{array} \right) [2]$$



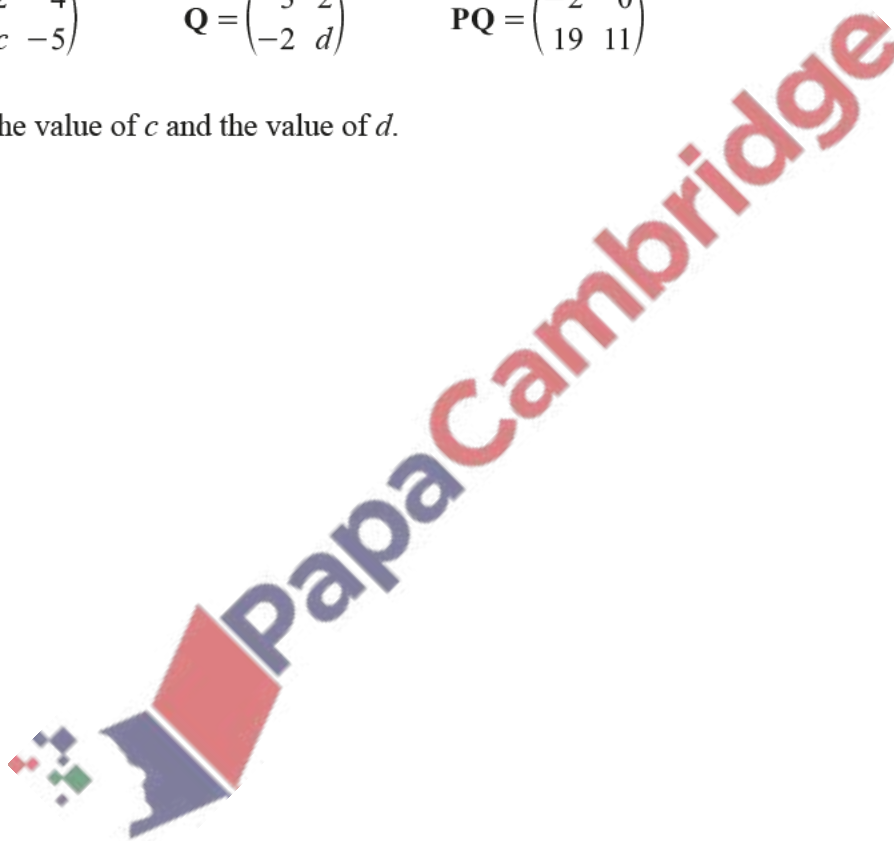
(a)  $M = \begin{pmatrix} 5 & 1 \\ 2 & 3 \end{pmatrix}$        $N = \begin{pmatrix} 4 & -2 \\ 3 & 0 \end{pmatrix}$

Find  $M - N$ .

$\begin{pmatrix} & \\ & \end{pmatrix}$  [1]

(b)  $P = \begin{pmatrix} 2 & 4 \\ c & -5 \end{pmatrix}$        $Q = \begin{pmatrix} 3 & 2 \\ -2 & d \end{pmatrix}$        $PQ = \begin{pmatrix} -2 & 0 \\ 19 & 11 \end{pmatrix}$

Find the value of  $c$  and the value of  $d$ .



$c = \dots\dots\dots$

$d = \dots\dots\dots$  [2]

On Monday, 40 adults and 20 children visit a museum.

On Tuesday, 30 adults and 35 children visit the museum.

The cost of an adult ticket is \$2.50 and the cost of a child ticket is \$2.

This information can be represented by the matrices **M** and **N**.

$$\mathbf{M} = \begin{pmatrix} 40 & 20 \\ 30 & 35 \end{pmatrix} \quad \mathbf{N} = \begin{pmatrix} 2.50 \\ 2 \end{pmatrix}$$

(a) (i) Work out **MN**.

$$\mathbf{MN} = \quad [2]$$

(ii) Explain what the numbers in your answer to part (a)(i) represent.

.....  
 ..... [1]

(b) The museum increases the cost of tickets by 10%.

Complete matrix **P** to show the new ticket costs.



$$\mathbf{P} = \begin{pmatrix} & \\ & \end{pmatrix} [2]$$